

WHAT IS CLAIMED IS:

1. A method of logging audio data; said method comprising:
 - acquiring audio data;
 - storing said audio data in a buffer;
 - 5 comparing the amount of said audio data stored in said buffer to a predetermined threshold value; and
 - responsive to said comparing, writing said audio data to a non-volatile storage medium.
2. The method of claim 1 wherein said acquiring comprises receiving audio data output from one or more audio sensors.
- 10 3. The method of claim 1 wherein said storing comprises transferring at least a portion of said audio data to said buffer in raw form.
4. The method of claim 1 wherein said storing comprises transferring at least a portion of said audio data to said buffer after processing.
- 15 5. The method of claim 1 wherein said comparing comprises comparing the amount of said audio data stored in said buffer with a predetermined percentage of buffer capacity.
6. The method of claim 1 wherein said writing comprises writing all of said audio data stored in said buffer to said non-volatile storage medium in a single write operation.
- 20 7. The method of claim 1 wherein said writing comprises formatting said audio data in accordance with one of File Allocation Table format or a flash file system format.
8. The method of claim 1 wherein said writing comprises writing said audio data to a non-volatile storage medium comprising flash memory.
- 25 9. The method of claim 1 further comprising selectively repeating said acquiring, said storing, said comparing, and said writing.
10. The method of claim 1 further comprising selectively transmitting said audio data to a remote device in accordance with one of File Transfer Protocol, Hyper-Text Transfer Protocol, or Network File System protocol.
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11. The method of claim 1 wherein said acquiring, said comparing, and said writing are implemented by a programmable logic controller.
12. An audio data acquisition apparatus comprising:
- 35 data logging logic;
- a buffer having data storage capacity operative to receive audio data from said data logging logic;
- a buffer monitor operative to compare the amount of said audio data in said buffer with a predetermined threshold value; and
- 40 a non-volatile storage medium operative to receive said audio data from said buffer when the amount of said audio data in said buffer reaches said predetermined threshold value.
13. The apparatus of claim 12 wherein said data logging logic is reconfigurable.
14. The apparatus of claim 12 wherein said data storage capacity of said buffer is selectively alterable.
- 45 15. The apparatus of claim 12 wherein said non-volatile storage medium is flash memory.
16. The apparatus of claim 15 wherein said non-volatile storage medium is removable.
17. The apparatus of claim 12 further comprising:
- 50 an output port; and
- a data interface operative to transmit said audio data to a remote device through said output port.
18. The apparatus of claim 17 wherein said data interface transmits said audio data in accordance with one of File Transfer Protocol, Hyper-Text Transfer
- 55 Protocol, or Network File System protocol.
19. The apparatus of claim 12 wherein said data logging logic is implemented in a programmable logic controller.
20. A computer readable medium encoded with data and computer executable instructions for logging audio signals; the data and instructions causing an
- 60 apparatus executing the instructions to:

acquire audio signals;
store said audio signals and information based on said audio signals as
data in a buffer; and
write said data to a non-volatile storage medium when the amount of
said data stored in said buffer reaches a predetermined threshold
value.

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21. The computer readable medium of claim 20 further encoded with data and
instructions, further causing an apparatus to acquire said audio signals from
one or more acoustic sensors.

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22. The computer readable medium of claim 20 further encoded with data and
instructions, further causing an apparatus to store said audio signals in said
buffer in raw form.

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23. The computer readable medium of claim 20 further encoded with data and
instructions, further causing an apparatus to store said audio signals and said
information based on said audio signals in said buffer after processing.

24. The computer readable medium of claim 20 further encoded with data and
instructions, further causing an apparatus to write all of said data stored in
said buffer to said non-volatile storage medium in a single write operation.

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25. The computer readable medium of claim 24 further encoded with data and
instructions, further causing an apparatus to format said data in accordance
with one of File Allocation Table format or a flash file system format.

26. The computer readable medium of claim 20 further encoded with data and
instructions, further causing an apparatus to write said data to flash memory.

27. An audio data logging system comprising:

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data logging logic;

storing means for receiving audio data from said data logging logic
and for storing said audio data temporarily;

comparing means for comparing the amount of said audio data
temporarily stored in said storing means with a predetermined
threshold value; and

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a non-volatile storage medium operative to receive said audio data from said storing means when said comparing means determines that said predetermined threshold value has been reached.

- 95 28. The system of claim 27 wherein said non-volatile storage medium is flash memory.
29. The system of claim 27 wherein said non-volatile storage medium is removable.
30. The system of claim 27 further comprising means for transmitting said audio data to a remote device.
- 100 31. The system of claim 30 wherein said means for transmitting transmits said audio data in accordance with one of File Transfer Protocol, Hyper-Text Transfer Protocol, or Network File System protocol.
32. The system of claim 30 wherein said data logging logic is implemented in a programmable logic controller.
- 105 33. An audio signal input/output apparatus comprising:
audio logic operative to receive audio signals from a sensor;
a data storage medium coupled to said audio logic and operative to store audio data; and
an interface enabling bi-directional data communication between said
110 apparatus and a remote device.
34. The apparatus of claim 33 further comprising an analog to digital converter operative to convert analog signals received from said sensor to digital signals.
35. The apparatus of claim 33 wherein said audio logic is further operative to
115 receive configuration instructions through said interface.
36. The apparatus of claim 33 wherein said audio logic is further operative to compare said audio signals received from said sensor with signature audio signal data stored in said data storage medium.
37. The apparatus of claim 33 wherein said audio logic is further operative to
120 transmit said audio data through said interface.

38. The apparatus of claim 33 wherein said audio logic is implemented in a programmable logic controller.

39. A method of implementing audio data in a monitor and control system; said method comprising:

125 acquiring audio data during operation of a system component;
 responsive to said acquiring, comparing said audio data with at least
 one signature audio signal profile; and
 selectively executing a control function responsive to said comparing.

40. The method of claim 39 wherein said acquiring comprises receiving audio
130 data output from one or more audio sensors.

41. The method of claim 39 wherein said comparing comprises retrieving said at least one signature audio signal profile from a data storage medium.

42. The method of claim 39 wherein said comparing comprises analyzing said audio data relative to a normal audio signal profile representative of normal
135 operation of said system component.

43. The method of claim 39 wherein said comparing comprises analyzing said audio data relative to an irregular audio signal profile representative of irregular operation of said system component.